Systematic Review Snapshot

TAKE-HOME MESSAGE
In patients with new-onset atrial fibrillation and symptom onset within 48 hours, rhythm control is preferred over rate control if the patient is younger than 65 years. For patients with congestive heart failure, valvular heart disease, hypertension, or permanent atrial fibrillation, rate control remains the favored strategy.

Is Rhythm Control Better Than Rate Control for New-Onset Atrial Fibrillation in the Emergency Department?

EBEM Commentators
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Results

ED-relevant atrial fibrillation trials.

<table>
<thead>
<tr>
<th>Study (n)</th>
<th>Design</th>
<th>Inclusion Criteria</th>
<th>Primary Outcome</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIAF,2</td>
<td>Multicenter RCT</td>
<td>18–75 y, persistent AF 7–360 days</td>
<td>Symptomatic improvement at 3 wk, 3 mo, 6 mo, and 1 y</td>
<td>No difference between groups at any follow-up time</td>
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<td>2000 (252)</td>
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<tr>
<td>HOT CAFE,3</td>
<td>Multicenter RCT</td>
<td>50–75 y, persistent AF 7–730 days, first symptomatic episode of AF</td>
<td>Death and stroke from all causes at 12 mo</td>
<td>No difference between groups</td>
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<td>2004 (205)</td>
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<tr>
<td>Okcun,4</td>
<td>Single-center RCT</td>
<td>&gt;18 y, persistent AF &gt;48 h, nonischemic LV dysfunction</td>
<td>Embolic events and death at 3 y</td>
<td>Rhythm control with fewer deaths (15% vs 43%; P&lt;.001) with NNT=4; no difference in embolic events (15% vs 11%; P&gt;.05)</td>
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<td>2004 (154)</td>
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<tr>
<td>J-RHYTHM,5</td>
<td>Multicenter RCT</td>
<td>&gt;18 y, paroxysmal AF &lt;48 h</td>
<td>Composite primary outcome at mean follow-up of 578 days</td>
<td>Rhythm-control arm with significantly lower event rate (15% vs 22%; RR 0.664; 95% CI 0.481–0.917) with NNT=14</td>
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<td>2009 (827)</td>
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ED, Emergency department; RCT, randomized control trial; AF, atrial fibrillation; LV, left ventricle; NNT, number needed to treat; RR, relative risk, CI, confidence interval.
Ten trials with a total of 7,867 participants met the inclusion and exclusion criteria. There was no difference between the 2 treatment strategies in all-cause mortality (primary endpoint), stroke, systemic embolism, worsening heart failure, myocardial infarction, and bleeding (secondary endpoints). An exploratory subanalysis of patients younger than 65 years revealed that atrial fibrillation rhythm control was superior to rate control in the prevention of all-cause mortality (relative risk 3.03; 95% CI 1.59 to 5.75).

Four high-quality trials (Table) were selected for their relevance to emergency physicians on the basis of a younger age profile, paroxysmal atrial fibrillation subtype, and early presentation to health care providers within 7 days of symptom onset. The Japanese Rhythm Management Trial for Atrial Fibrillation trial holds the most relevance for the emergency department (ED), given the large number of patients younger than 65 years, its selection criteria closely mimicking an ED presentation of atrial fibrillation within 48 hours, and a relevant composite primary endpoint for ED caregivers that included death, stroke, and embolism. In this trial, rhythm control performed significantly better than rate control with regard to the composite primary endpoint; however, there was no difference between treatment groups with respect to the individual components, including death, stroke, and embolism.

**Commentary**

Atrial fibrillation is a common dysrhythmia in the ED, with an estimated prevalence exceeding 5 million in the United States. The incidence and prevalence are expected to increase with the aging population, so emergency physicians should expect to encounter more patients with atrial fibrillation.

Atrial fibrillation is a strong independent risk factor for ischemic stroke. Maintenance of sinus rhythm in the anticoagulated atrial fibrillation patient has been clearly associated with a long-term mortality benefit and fewer strokes. Cardioversion, however, is not always without harm. Complications include adverse arrhythmias (eg, torsades des pointes when using class III agents) and procedural sedation–related events (when direct current cardioversion is necessary).

This meta-analysis more accurately reflects a typical ED population, given its inclusion of younger patients presenting with paroxysmal atrial fibrillation, which was a limitation of previous Cochrane reviews that were heavily weighted on the Atrial Fibrillation Follow-up Investigation of Rhythm Management trial with 4,060 patients older than 65 years, a population poorly representative of ED samples in which rhythm control is a feasible option.

The meta-analysis by Chatterjee et al confirms the notion that patient selection is the key to better outcomes for the treatment of atrial fibrillation in the ED. Although a rhythm-control strategy may work for patients younger than 65 years, overall the meta-analysis favors a rate-control strategy in patients with atrial fibrillation, including those with concurrent hypertension, heart failure, valvular heart disease, and permanent atrial fibrillation.


Michael Brown, MD, MSc, Alan Jones, MD, and David Newman, MD, serve as editors of the SRS series.